Contents

Editors' Preface	v
Biography of Toshio Mura T. Mori	. xi
List of Publications by Toshio Mura	xvii
List of Contributors	xxix
List of Additional Papers Presented	xxxiii
An Inverse Problem in Nondestructive Inspection of a Crack in a Plate with an Inhomogeneity by Means of the Electrical Potential Method H. Abé and Y. KANOH	1
The Effective Thermoelastic Properties of Whisker-Reinforced Composites as Functions of Material-Forming Parameters D. H. Allen and JW. Lee	17
On the Specific Damaging Effects of Surface and Near-Surface Inclusions MH. Ambroise, T. Bretheau, and A. Zaoui	41
On a Correspondence Between Mechanical and Thermal Effects in Two-Phase Composites Y. Benveniste and G. J. Dvorak	65
On Atomic Spacing in Large Regular Cubic Lattices B. A. Boley	83
Crack Tip Toughening by Inclusions with Pairs of Shear Transformations SJ. Chang and P. F. Becher	89
Boundary Conditions at Interfaces	100

viii Contents

M. A. Eisenberg	115
A Circular Inclusion with Slipping Interface in Plane Elastostatics T. Honein and G. Herrmann	127
Mechanical Properties of Cracked Solids: Validity of the Self-Consistent Method H. HORII and K. SAHASAKMONTRI	137
The Elastic and Diffusional Interaction of Spherical Inhomogeneities in a Uniaxial Stress Field W. C. JOHNSON	161
Analysis of Cracks in Transversely Isotropie Media L. M. KEER and W. LIN	187
Modified Green Functions in the Theory of Heterogeneous and/or Anisotropic Linearly Elastic Media E. Kröner	197
Inclusion With and Without Free Surfaces in a Plane Strain J. K. LEE	213
Interaction of Slip Bands in High-Cycle Fatigue Crack Initiation T. H. LIN and Q. Y. CHEN	231
Elastic Behavior of Laminated Flexible Composites Under Finite Deformation SY. Luo and TW. Chou	243
On the Basic Components of the Interaction Energy Between Two Infinitesimal Circular Defects in an Isotropic Elastic Body S. MINAGAWA and H. OGATA	257
Successive Iteration Method in the Evaluation of Average Fields in Elastically Inhomogeneous Materials T. Mori and K. Wakashima	269
Effects of Nonmetallic Inclusions on the Fatigue Strength of Metals Y. MURAKAMI	283
Elastic Solids with Microdefects S. Nemat-Nasser and M. Hori	297
The Effective Moduli of Layered Media—A New Look at an Old Problem A. N. Norris	321
Thermomechanical Hysteresis and Analogous Behavior of Composites O. B. Pedersen	341

Contents ix

The Effect of Voids and Inclusions on Wave Propagation in Granular Materials M. H. SADD, A. SHUKLA, H. MEI, and C. Y. ZHU	367
Crack, Dislocation Free Zone, and Dislocation Pile-Up Model for the Behavior of the Hall-Petch Relation in the Range of Ultrafine Grain Sizes	
K. Saito, M. Iwamoto, Y. Nomura, and T. Nakamura	385
The Elastic Fields Produced by an Infinitesimal Dislocation Loop, an Interstitial Atom, and a Vacancy Moving with Uniform Velocity H. SEKINE	399
Energy Consideration on a Branched and Curved Crack Extension Y. Sumi	407
Elastic/Plastic Indentation Hardness of Ceramics: The Dislocation Punching Model	421
K. TANAKA and H. KOGUCHI	421
Some Thoughts on Inhomogeneous Distribution of Fillers in Composites M. TAYA	433
The Eigenvectors of the S Matrix and Their Relations with Line Dislocations and Forces in Anisotropic Elastic Solids T. C. T. TING	449
On the Strain Energy of Transformation Inhomogeneities in Solids T. TSAKALAKOS	469
The Hemispherical Inhomogeneity Subjected to a Concentrated Force E. TSUCHIDA, D. KOURIS, and I. JASIUK	497
Dislocation Inhomogeneity in Cyclic Deformation D. WALGRAEF and E. C. AIFANTIS	511
Equivalence of Green's Function and the Fourier Series Representation of Composites with Periodic Microstructure K. P. Walker, E. H. Jordan, and A. D. Freed	535
Polarization, Virtual Mass, and Analogous Elastic Properties L. J. Walpole	559
Edge Crack Solution Through Use of Dislocation Shielding/ Antishielding J. WEERTMAN	573
Variational Estimates for the Overall Behavior of a Nonlinear Matrix— Inclusion Composite	
J. R. Willis	581

x Contents

heory of Plasticity for a Class of Inclusion and Fiber-Reinforced																				
Composites																				
Ү. Н. Zhao	and	G. J	. V	VEN	G				•	•	•	•	•	•		•	•	•		599
Author Index .																				623
Subject Index .																				629